

Here are some of the Strategies for Early Educators and Strategies for Families for the subdomain Mathematical Thinking and Expression. We believe these would help the teacher address the given scenario and CHANGE PRACTICE to better meet the needs of children, and align better with the expectations for what children begin to do in prekindergarten.

### Strategies for Early Educators

- Make a variety of materials easily accessible for all children for the purpose of developing and refining mathematical knowledge (e.g., blocks and accessories, collections, sand and water accessories, art supplies, dramatic play props, manipulatives, and literacy materials).
- Prompt thinking and analysis by asking open-ended questions (e.g., “How will you know how many plates you need for the guests at your party?”).
- Provide large amounts of uninterrupted time for active exploration.
- Provide a variety of manipulatives that can be counted, sorted, and ordered.
- Schedule multiple counting activities in the context of daily experiences and routines.
- Model problem solving strategies.
- Provide opportunities to observe naturally occurring patterns within the indoor and outdoor environments. Use art materials and manipulatives with children to create patterns (e.g., weaving, painting, stringing beads, and building blocks).
- Provide opportunities to measure (e.g., “How many steps does it take to walk from the front door to your cubby?” or “How many blocks long is your arm?”).
- Provide opportunities to weigh objects (comparing the weight of common classroom objects using a balance scale).
- Participate in activities that involve making observations (e.g., rainfall or changes in temperature).

### Strategies for Families

- Play with your children. Talk about what they are doing. Count and use numbers as you play together. Take advantage of every opportunity to count.
- Provide everyday opportunities to explore math concepts. Ask your child to sort and count groceries or the laundry, help set the table, and predict the number of cups of water it will take to fill a pitcher.
- Set aside, protect, and participate in periods of time every day for free play that is initiated by your child.

- Help children develop mathematical skills through music by singing, dancing, and playing with simple homemade instruments – oatmeal boxes, pots and pans, wooden spoons, or juice cans filled with rice or dry beans.
- Share in the planning and care of a plant or garden. Observe, and measure plants as they grow. Keep a journal of your child's observations.
- Allow your child to help you prepare an afternoon snack. Talk about the recipe and let him measure, pour, and stir the ingredients.
- Cook with your child. Help your child understand how to measure the ingredients and observe the changes in the ingredients as liquid is added and when heat is applied through cooking or baking.

Here are a few relevant strategies from the one of the other subdomains within Cognitive Development – Scientific Thinking and Invention, ... .

## Scientific Thinking and Invention

### Strategies for Early Educators

- Engage children in observing events, exploring natural objects, and reflecting on what they learn (e.g., hang a birdfeeder outside the classroom window and use binoculars to observe the visitors; or even better, just go outdoors).
- Give children freedom to come up with their own solutions to problems. Listen to their ideas. Model the thinking process by talking out loud about a problem and reflecting on how it might be solved.
- Create a sensory center to stimulate curiosity and exploration. Mix colors (paint, markers, food coloring, crayons) to see what happens.
- Provide a science discovery center where children can compare the properties of objects such as shells, rocks, nests, and skeletons. Also include science materials throughout the indoor and outdoor environments.
- Provide simple tools (e.g., magnifying glass, binoculars, eyedropper, sieve, simple microscope) to use in exploration.
- Encourage scientific exploration throughout the classroom (e.g., set up sinking and floating experiments at the water table; provide cooking experiences that encourage the observation of changes in matter; equip the block center with materials that encourage explorations of vehicles and ramps).
- Take class walks throughout the year to collect a variety of objects, observe them carefully, and describe differences in shape, edges, color, texture, and size.
- Expose children to the scientific method of inquiry: observing, questioning, predicting, experimenting, and representing results.
- Provide a variety of outdoor natural materials (smooth stones, shells, pinecones, acorns) that children can investigate.

## Strategies for Families

- Encourage your children to experiment. Talk to them about what they discover (for example, which toys sink in the bathtub and which float).
- Take your child on nature walks. Take a bag along and collect small rocks, feathers, leaves, and other objects to explore and discuss. Observe wet and dry places and how the sun warms objects it shines on.

## Social Connections

### Strategies for Early Educators

- Use literature, puppets, and role-playing to help children connect to the feelings of others.
- Give children access to a wide selection of quality multicultural books.
- Implement activities that reflect the similarities and differences among the children and families within the classroom (e.g., do body tracing and provide children with multicultural crayons to represent the variety of skin tones).
- Promote observations and discussions of things that are similar and things that are different.
- Welcome families into the classroom to share their cultures, traditions, and talents.
- Explore the physical, biological, and social world, beginning with your school (e.g., a visit to another classroom) and then into the community, through field trips.

### Strategies for Families

- Celebrate family and community traditions. Take your child to local festivals to learn about other cultures. Start family traditions of your own.
- Share relevant work experiences with your children. Take them to your work place, if appropriate.

## Creative Expression

### Strategies for Early Educators

- Provide access to a variety of materials, media, and activities that encourage children to use their imagination and express ideas through art, construction, movement, music, etc.
- Take children to museums, galleries, plays, concerts, and other appropriate cultural activities.

- Give children opportunities to respond through music, movement, dance, dramatic play, and art (e.g., following expressive movement experiences, ask them to draw a picture of themselves and then tell you about the picture).
- Provide age-appropriate art materials (non-hazardous paints, modeling materials, a wide variety of paper types, writing and drawing utensils of various sizes and types, and collage materials).
- Use a variety of horizontal and vertical surfaces (easels, floor, and walls) and two- and three-dimensional objects (boxes, clay, and plastic containers (for creative expression.
- Play music, provide materials such as scarves, streamers, and bells, and make room indoors and outdoors for children to move freely.
- Provide space and simple materials (scarves, blocks, play dough) that can be used in a variety of ways to encourage creative play. Brainstorm with children for ideas about materials to enhance their play.
- Make prop boxes to hold basic materials for pretend play (e.g., props for a beauty parlor, post office, pet store, doctor's office).
- Use community outings to introduce new ideas and concepts. Open the classroom to members of the community.

### Strategies for Families

- Encourage your children to talk about what they create and take time to listen to their thoughts.
- Create an art box that contains markers, crayons, scissors, paper, tape, and play dough.
- Collect magazines for your child to cut out pictures. Fill a box with string, leftover wallpaper, dress patterns, tissue paper, paper towel rolls, small boxes, fabric, or other such items children can use creatively.